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ABSTRACT

The German education and training system has been shaped by a variety of philosophical, pedagogical, economic, political, and societal ideas and events during its historical development. Its main features and trends can be traced back for at least a century; they have proven to be stable and resistant to major changes. The hierarchical structure of the present education system, based on three separate tracks, and the vocational training system, based on apprenticeship, can be traced back to the Middle Ages. Several attempts to integrate vocational and general education have failed. Instead, parallel school streams providing both general and vocational subjects have been established and expanded according to the needs of the economy or to political and social demand. Reform plans for the apprenticeship system have likewise been dropped in the face of threats to the social stability and the economic viability of the nation. Today, the public school system provides both general and vocational education in separate school systems. Initial training through apprenticeship is considered a legitimate type of training for young people, especially school leavers. Although the French and German vocational training systems followed similar patterns up to the mid-19th century, obvious turning points have led to differences between the two countries that have been maintained up to the present. (33 endnotes) (YLB)

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by Irmgard Nübler

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Introduction

Education and training systems vary considerably between different countries. Even countries of similar historical, cultural, economic and political background have developed different structures, institutions and modes of training. Therefore, various typologies of education and training systems have been developed in order to classify them and to define basic forms.[1]

The various national training systems were not designed on the drawing board but are rooted in a tradition that sometimes can be traced back several centuries. Education and training systems that initially displayed similar structures start to diverge at some point in history. Many of these differences are maintained to the present day. Education and training systems may, therefore, adjust to changes in technology and training needs in quite different ways.

The inherent functioning of present training systems cannot really be understood without knowing about their genesis. This paper's objective is to contribute to a better understanding of present education and training systems by studying their roots and traditions, underlying philosophies and legitimacy. Furthermore, the paper's aim is to demonstrate the stability of certain structures, trends and attitudes once they had evolved.

This information helps to identify the limits to change in national training systems and to select those training policy options which are feasible and acceptable. Furthermore, sensitive areas will be identified where changes and policies will have to be designed carefully in order to ensure implementation.

This paper addresses this issue by analysing the historical development of the education and training system in Germany. The aim is to identify the ideas, attitudes, trends and events which had a major impact on the education and training system during its historical development. Furthermore, the analysis points out the stable trends, characteristics, and structures of the German training system as well as its underlying legitimacy.

A previous historical analysis of the French education and training system suggests some comparisons.[2] *The French and German vocational training systems followed similar patterns up to the mid-nineteenth century. This paper refers to the French system where turning points became obvious and where differences between the two countries were maintained up to the present.*

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I. General and vocational education system

A. Roots and major historical impacts

The system of education in Germany over the past 300 years has been influenced by various philosophical, pedagogical and political ideas, as well as by strong concerns about economic development and international competitiveness.

1. Philosophical and pedagogical ideas

The seventeenth century philosophy of realism suggested the inclusion of vocational training in the general education system.[3] The pietists of the late seventeenth and early eighteenth century supported the idea of combining work and education in order to develop a positive attitude towards work. The philan-thropists saw the task of education as one serving the needs of economic development and considered that man should concern himself only with what might be of practical value and that youth should be equipped only with useful knowledge and skills. Pestalozzi (1746 - 1827) stated that "knowledge without skills is the worst present an ingenious enemy could give to an era"[4]. As a consequence, practical work was introduced in general schools. Students were expected to learn and understand scientific, mathematical and technical knowledge by practicing, experimenting and applying skills.

Furthermore, a variety of schools at different levels were created to teach practical and useful skills. For primary schools leavers, a number of religious and industrial Sunday schools were established. While the religious Sunday schools offered refresher lessons in general and religious education, industrial schools were secular and clearly commercially minded. One of the objectives of the industrial schools was to develop children's discipline, punctuality, industriousness and other work attitudes favoured by employers.

At secondary level, "Realschulen" (middle schools) was created to teach "real" things which would be of use in later life. In 1707, the first mathematical and mechanical "Realschule" was founded in Halle. Many of these "Realschulen" provided general know-ledge along with a broad variety of vocational subjects. Finally, technical and trade schools were established which only provided specialised training in preparation for specific professions and trades.

By the end of the eighteenth century, the education and training system in Germany was divided into three parts. First, general education was offered in the religious-based elementary schools which provided teaching free for the poor masses, and in the Latin schools and Gymnasiums which provided higher education for a privileged minority. Second, vocational and technical training within the general education system was provided by the knight academies for young noblemen, by the vocationally-oriented Realschulen for the emerging untitled middle class, and by the industrial and trade schools. Third, vocational training outside the school system was provided through apprenticeships.

2. Separation of general and vocational education

The New Humanist movement is held responsible for a major development in the German education and training system. Wilhelm von Humbold (1767-1835), the Minister of Culture of Prussia, established the crucial idea that education ("Bildung"), i.e. the development of the individual personality to its most perfect state, could only be achieved by humanist culture.

In 1809, von Humbold stated that "Bildung" (education) and "Ausbildung" (vocational and technical education and training) are regulated by different principles. The task of general education was to purify and cleanse the individual, whereas specific education was designed to equip man with skills for useful purposes. If general and specific education were mixed, education would become impure, resulting in individuals who were neither complete, well rounded personalities nor complete citizens.

In 1810-1811, the Prussian school system was reformed along the lines of the new humanist ideas and principles. The concept of "Bildung" was introduced through classical humanism in the "Gymnasium" as the highest educational ideal and the principal objective of State education. The "Gymnasium" also became the only institute which gave access to university.

Realschulen were considered useless and even dangerous as long as their curricula encompassed both general and vocational/technical subjects; they therefore gradually dropped the vocational part of their curricula. Technical schools and trade schools which provided only specific technical education were considered useful and obtained permission to continue.[5]

The result of the reform was a State-run general school system which basically did not impart any vocational knowledge or skills. This system was based on three pillars: the "Gymnasium" which provided education to an élite, the "Realschule" which offered middle-level education, and the "Volksschule" which gave education to the masses. Vocational education and training was offered only in specialised schools and academies. Wilhelm von Humbold's activities were of immediate consequence for vocational education and training. "In denying to vocational training official recognition, trade training in its entirety was placed outside the confines of the State education system. "... The trade training system was to receive no major stimulus to further development until the beginning of the twentieth century."[6] The history of education in Germany has been characterised by the dichotomy between vocational training ("Berufsbildung") on one side and general education ("Bildung, allgemeine Menschenbildung") on the other. The development of the education and training system has been based on this dichotomy up to the present day.

3. The certification system ("Berechtigungswesen")

A system of awarding certificates, the so-called "Berechtigungswesen", introduced during the nineteenth century, had a great effect on the development of the education and training system. Only those students who had obtained the required certificate could enter higher level schools. Only a limited number of schools selected by the Government were, however, entitled to award the certificates. In general, these were the schools with curricula to a large extent based on general education.

This certification system had two major political functions. First, it was an instrument of the emerging untitled middle class to limit the privileges of the aristocracy. The certification system gave access to professions, careers in the army or in the civil service, based on certificates and proof of proficiency, not on birth.

A second function of the certification system was to exclude lower classes from higher education. First, those schools which were entitled to award the certificates were not free of charge and therefore were closed to the poor. Second, as the right to award the certificate was based on a general curriculum, most vocational schools were excluded. Graduates from vocational schools did not receive a certificate and therefore could not enter higher level institutes. Even the high level vocational or technical institutes which prepared for specific professions required the general education certificate. The traditional apprenticeship system was therefore also excluded and there was no way for working class children to qualify for higher posts by moving up a vocational school ladder. Third, the elementary schools were not linked to the "Berechtigungswesen" although it had been designed by the New Humanist

educational reform as a general education institute. The elementary schools were supposed to provide basic education for the "uneducated masses"[7]. As a consequence, the certification system reinforced the hierarchical structure of the education system.

Furthermore, the certification system supported the policy of New Humanism in separating general and vocational education. Schools were eager to obtain the right to issue certificates as it enhanced their reputation. Hence, most schools offering general and vocational subjects dropped the vocational part. Thus, vocational training was placed outside the public school system.

4. Economic development and international competitiveness

From 1873, Germany experienced a major economic crisis. Industrial development lagged behind and German industry was considered not to be competitive in the world market. In 1876, the director of the trade academy in Berlin reported from the World exhibition in Philadelphia that the German industrial products had been classified as low quality [8]. The inefficient training system and, in particular, the lack of specialised schools was considered as a major cause. Further, it was maintained that a systematic theoretical training element in apprenticeship would be increasingly important for further economic development. Thus, evidence of foreign competition had highlighted the importance of good training for the production of high quality goods and services [9].

As a consequence, the school system was reformed and expanded. Schools were newly established, upgraded, transformed or closed. This development at the institutional level clearly reflects the process of separating general from vocational education. While a large number of specialised and trade schools were newly established, existing vocational schools were closed or transformed into general schools. These vocational schools had initially provided both vocational and general education. The general education they provided was considered inadequate and they were not entitled to award certificates. Their graduates, therefore, no longer had access to higher level education, not even to higher level vocational or technical institutions. Thus, after 1878, these schools were either closed or transformed into general secondary schools in order to obtain the right to issue certificates. This can be illustrated by the history of a craft school which was established in 1864 in Dortmund. In 1868 it was called municipal trade school (Städtische Gewerbeschule), and by 1879 it had developed into a higher general education school (Höhere Bürgerschule) entitled to award certificates.

It is interesting to note that since industrialisation, the concern about international competitiveness as well as economic development has been the major argument in favour of, or against reforms and changes in the German education and training system.

5. Vocational part-time schools

During the nineteenth century, industrial Sunday schools had been transformed into continuous education schools ("allgemeine Fortbildungsschulen") providing some general education for elementary school leavers. Like elementary schools they were not entitled to issue certificates and school leavers had no access to higher level education. At the same time, they were not allowed to include technical and economic content in their curricula. Working class youth was very reluctant to attend an extended elementary school programme and the general continuous education schools were a failure.

When it was realised after 1873, that further economic development and international competitiveness required some systematical training for apprentices[10], the continuous education schools were reformed to take up this task.

At the end of the nineteenth century, Kerschensteiner disagreed with the ideas of

Wilhelm von Humbold and asserted that "Bildung" was not an exclusive function of the language, literature and history of ancient Greece and Rome. According to him, education ("Bildung") takes place by way of vocational and trade training ("Berufsbildung"): "The way to "Bildung" is reached by work, to which in each case the individual is inwardly called or in which he may later find his calling".[11] "Trade training is the door to general character training ("Menschenbildung")".[12]

Kerschensteiner maintained that the curriculum in the continuous education schools had to focus on vocational training, and if vocational education was to be effective then the system must be reorganised with the interests of youth as the guiding principle. The main interest of the school-leaver who had just entered the world of work was his trade.

In 1899, it was proposed that the continuous education schools be transformed into vocational schools and, in 1900 Kerschensteiner opened the first part-time vocational schools in Munich. The curriculum encompassed practical training, theoretical trade training, and instruction in citizenship, centred around various trades and including accounts of important events in history and of outstanding personalities. The practical training was to be given by skilled tradesmen and the theory by qualified full-time teachers. Now the young people no longer attended on Sundays or in the evening but once a week in the morning or afternoon of a working day.

It has been asserted in this chapter, that educational policy in line with New Humanism had enforced the separation of general and vocational education in the State-run school system which has been maintained up to the present day. The vocational part-time schools, however, taught general and vocational subjects and still remained part of the public school system. The part-time vocational schools could survive and were accepted by the public education system because they were considered as a parallel track to the general higher level education system. They were regarded as a continuation of elementary school without access to higher education. Even higher level technical and commercial schools were closed to graduates from part-time vocational schools as entry required a certificate from the general secondary school system. There were no attempts to integrate vocational education into the mainstream general school system. The education system in its structure and the dichotomy between general education and vocational education was never questioned.

In 1919, the Weimar Constitution postulated compulsory further education up to 18 years. In those German states where the necessary laws were passed, it became compulsory for each apprentice to spend one full day in a part-time vocational school. In 1938, the Reich Compulsory Education Act came into force and attendance at vocational school became compulsory throughout Germany. As a consequence, the dual system, which combines apprenticeship training in enterprises and school-based training became fully institutionalised.

B. Limits to change after 1945

The main structures and characteristics of the present German education system had evolved during the eighteenth and nineteenth century. After the Second World War several attempts were made to reform the general and vocational school system, however, it proved to be resistant to major change and reform. The history of these efforts demonstrates the limits of education and training policy to implement changes and reforms, in particular when it intends to change stable structures and trends, or when society does not consider the proposed type of education or training as legitimate.

1. Reform proposals from outside

The United States, British and French administrations in the three Western Zones put forward various proposals to reform the education and training system in post-war Germany. They took different approaches, each suggesting changes according to their own education system. The Americans recommended that

elementary, secondary and vocational schools should be united to form a comprehensive school system for all children and young people below university level. The aim was to overcome the deep division between general and vocational education which had existed in Germany for at least a century. The existing tripartite system comprising "Gymnasium", "Realschule" and "Volksschule" should be abolished and should be replaced by the comprehensive system with vocational schools becoming part of the secondary school system.

The British accorded low priority to vocational education and focused their attention and reform proposals primarily on universities and secondary schools. Apprenticeship training was accepted as the basis of vocational training and the application of pre-1933 laws was recommended.

In the French Zone, vocational education received full attention. It was suggested to include more general subjects into vocational schools like Citizenship and Character training, German, and a foreign language. Furthermore, the integration of vocational training with the general system of primary, secondary and tertiary education was proposed.[13] Repeated attempts by the Allied administrations to implement their proposals were strongly opposed and did not obtain any co-operation from the German administration. The education and training system basically remained unchanged.

2. Reform proposals in the Federal Republic of Germany

Over the past 40 years, various political parties, governmental bodies, trade unions, and other interest groups brought forward proposals to improve and reform the existing education and training system. Reforms were suggested on economic and equity grounds. The proposals, the following debate and the implementation is an interesting case in demonstrating the limits to change in education and training systems.

In 1963, the Social Democrats formulated a proposal to reform the education and training system. The traditional three pillar system was to be replaced by a comprehensive education system which would integrate general and vocational education. Two years later, a commission to improve apprenticeship training[14] maintained that the historical gap between "Bildung" and "Ausbildung" should finally be bridged and equality of chances and maximum use of talent should be ensured. The main obstacles faced by apprentices wishing to advance to a trade, commercial or technical school or the higher education sector had to be removed. Unlike the Social Democrats, who had suggested the integration of vocational and general education, the commission suggested that the basic structure remained unchanged but that transfers between the systems be facilitated. Various groups in society resisted the proposed reform and both proposals were rejected.

When the Social Democrats came into power in 1969, they promoted a major reform of the upper secondary level education system to achieve equality of opportunity. They once more proposed the integration of general and vocational education. Furthermore, the number of students attending full-time vocational courses was to be increased, and the numbers of hours of instruction in the " Berufsschule" would be doubled. With the advent of the Social Democrats it thus appeared that the division between the systems, which had existed for more than one and a half centuries, would finally be removed.

While the unions supported the concept put forward by the Social Democrats, the Conservative opposition and the employers opposed the reforms, in particular the integration of general and vocational education, on the grounds that trade training and the economy would inevitably suffer. In 1973, the Minister of Culture in Bavaria, stated that" vocational training would thereby lose its identity. With its separate roots and dignity anchored in the world of work, the vocational training system should provide a real alternative to general education ."[15]

At the end of a debate which lasted for more than a decade, and a variety of proposals, the changes implemented were very limited. As education is a matter for the Länder, only the Länder governed by the Social Democrats introduced elements of the proposed reform. Subsequently, as the governments of these Länder have changed, some of the reforms are gradually being reversed and the education system is reverting to its traditional form. Efforts to reform the structure of the education system, in particular to break up the hierarchical three-pillar system and the dichotomy of general and vocational school system, had limited success.

C. Second Education Path

After 1945, it was realised that for economic and equity reasons the education system also had to provide access to higher level education for those who had not entered the mainstream general education path. The percentage of working class children attending universities was considered too low and the second path aimed to give gifted children opportunities to qualify for higher level education through further vocational instruction combined with general education. During the Cold War the second educational path was expanded to meet the demand for engineers and technicians, since the first educational root via the Gymnasium had failed to produce sufficient candidates wishing to study the sciences.[16] In the 1960's, a debate on the "educational catastrophe" was going on. The educational system of the Federal Republic of Germany was considered unable to meet the educational and training demands which technological development had imposed. Again, economic growth and international competitiveness were considered to be threatened. It was suggested to expand the education and training system and to give a large number of students access to middle and higher level education.

The proposals either to integrate vocational education and training into public schools or to increase transferability between the various tracks in the education system did not prove feasible. The demand for more equity in the education and training system and for an increased output of qualified workers resulted in the creation of a parallel track to the public general education system, the so-called second education path. This parallel track has been expanded according to the needs of the economy or to political and social demand.

Trade qualifications and occupational experience give access to higher education within the second path. The main objective of vocational schools in the second education stream is not to offer vocational qualifications but to award qualifying certificates giving access to the next higher level. Thus, the second educational path developed as a parallel certification and school system to the general mainstream system. It is not integrated into the general school system and transferability to the general education system is very limited.

It can be concluded that concerns for economic and technological progress and to some extent the concern for equality of chances resulted in changes and expansion of the education and training system. However, the new training needs did not result in a fundamental change of those structures and trends which had evolved in the historical process. Policies intending to break up these structures have to be considered a failure and the public school system has resisted vocational education. Rather, parallel structures have been established in order to maintain the dichotomy of general and vocational education and the hierarchical structure of the education system. This has been the case with the part-time vocational schools as well as the second education path.

II. Apprenticeship: roots and resistance to change

A. History of apprenticeship and the role of the craft sector

The history of apprenticeship in Germany is closely related to the development of the craft sector. Historical analysis shows that supply of apprenticeship training was related to the strength of the craft sector and to the employers' position in regulating and controlling apprenticeship.

Apprenticeship in Germany can be traced back to the Carolingian period, when vocations in craft and trade developed. During the 13th century apprenticeship existed in all regions of Germany. During the Middle Ages, the urban craft and trade sector became organised in guilds and was endowed with many privileges. Nobody was allowed to perform a craft or trade unless he had been trained according to the strict rules of the guilds and worked his way up from apprentice to journeyman and master. Furthermore, only those who met strict conditions, such as legitimate birth and free status of parents, were accepted as apprentices.

At the beginning of the eighteenth century, the absolutist State began to question the guilds' right to self determination. Productivity in the craft sector was lower than in the expanding large-scale manufacturing sector and the traditional apprenticeship system was considered unable to provide training for the new skills required in the mercantilist production mode. Furthermore, apprenticeship was criticised because it did not impart the theoretical skills which were increasingly considered important for econo-mic development. In 1731, the Government interfered with the privileges and rights of the guilds. While the State gained more control, the guilds lost their status as an autonomous solidarity group.[17]

The guilds were further weakened by a liberal economic policy following the Napoleonic Wars. The privileges of the guilds were considered a barrier to the free development of trade, industry and commerce. When the privileges were completely abolished, a major structural change was induced in the arts and craft sector with direct effects on vocational training. Apprenticeship was no longer based on the statutes of the guilds but became a matter of private agreement between employer and trainee. Only very few regulations existed to protect the apprentice. A new Trade and Industry Code of 1869, modelled on the French apprenticeship law of 1851, further deregulated apprenticeship. From then on, every young person employed in a workshop or factory to learn a trade was considered an apprentice. Basically, each employer could employ apprentices.

The unregulated apprenticeship system was severely detrimental to the quantity and quality of training. Apprenticeship underwent a severe crisis during the nineteenth century and little training was provided.

When the great depression began in 1873, the economic situation in the craft sector further deteriorated. Craftsmen blamed the economic liberalism and deregulation for their decline and impoverishment. They began to organise themselves in order to regain their former position. They received support from the Christian-social movement and a government policy that actively promoted the middle class in order to fight the Marxist movement.

Gradually, the craft sector regained privileges and power. As a consequence, apprenticeship revived and the quality of training improved. An amendment to the Trade and Industry Code in 1881 entrusted the newly founded chambers of commerce with the establishment of appren-

ticeship regulations. All masters who were members of the chambers had to respect these regulations. In 1897, the Law to protect artisans and craftsmen (Handwerkerschutzgesetz) re-established guilds and their corporation rights. The law also introduced compulsory membership of artisans in the chambers. Finally, in 1908, two amendments to the Trade and Industry Code gave a powerful impetus to apprenticeship training. The limited certificate of competence was introduced, i.e., employers wishing to employ apprentices had to prove their status as craftsmen. In addition, the guilds were required to exercise control over apprenticeship training.

The role of industry in drawing up the training regulations and laws was very limited. Little interest was shown in providing vocational training to meet industrial skill requirements. In addition, the Conservative Government favoured the craft and small enterprise sector for political reasons. The relatively passive role of industry had important consequences for the new order of apprenticeship. At the turn of the century, Germany instituted a new training system, shaped by forces that were led by pre-industrial and guild-based ideas and attitudes. The revival of the apprenticeship system is very strongly related to the revival of the arts and craft sector and small enterprises after 1880.

B. Resistance to change in apprenticeship

Like the school system, apprenticeship has come under criticism many times since the beginning of this century. Trade unions and the Social Democrats have brought forward proposals for major reforms in order to protect apprentices, to increase quantity and quality of training and to enhance equality of opportunity. The debates following the various proposals and their final implementation reflect the limited possibility to change stable structures in a training system.

1. The debate on reforms

In 1919, the trade unions called for the comprehensive regulation of apprenticeship, including on-the-job training and in vocational schools.[18] The unions demanded greater state and societal responsibility for vocational training and further integration of vocational training into the state school system. Their objectives were to have vocational training acknowledged as a public task, to ensure co-determination of trade unions and to reduce the influence of entrepreneurs in order to protect apprentices against exploitation and over-specialised training. Again, in 1959, the German Trade Union Federation (DGB) proposed another draft for an initial vocational training act containing the long-standing demands of the trade unions. Both proposals were rejected.

When Germany experienced a shortage of apprenticeships and growing youth unemployment in the 1950's, some State parliaments demanded a wider public role in the traditional system of preparing youth for work. Further, training experts advanced the idea that the German trade-training system had not kept pace with modern technological developments. The new type of factories would require different skills, and training in the use of technology would tend to become more important than training for a particular trade. It was suggested providing more training in schools only and in workshops separated from production.

All these suggestions provoked a strong reaction from employers. They felt that the participation of the unions would threaten their autonomy and would reduce flexibility and their ability to adjust to changes. Further, in the view of the German Association of Employers it was not the task of the State to indulge in any activity which could successfully be undertaken by one or more of its member groups.[19] The German Association of Chambers of Industry and Commerce emphasized that observation, imitation and practice by the apprentice formed the core of in-plant training. In their view, these functions could only successfully

take place in the factory, workshop, office or shop.

The Christian Democrats' policy of maintaining a strong middle class and promoting small and medium size enterprises and the craft sector led to strong opposition by the Government to an extension of State control over training, the integration of general and vocational education and to marked increases in the number of apprentices trained in schools only.[20]

2. Vocational Training Act of 1969

After a long debate, a compromise law was passed by Parliament in June 1969 to provide a legal framework and an institutional basis for the regulation of vocational training. The objectives were to improve educational opportunities for the individual and to provide for the needs of the economy and society at large for skilled, responsible, efficient and adaptable craftsmen. The law only regulated on-the-job training in firms, not training in vocational schools as that was a matter for the Länder. Thus, the unions' demand for a comprehensive regulation was not considered.

All parties in the Federal Government agreed that the system of in-plant training combined with theoretical instruction in part-time vocational schools is adaptable to economic and technological developments. Therefore, apprentices were still required to attend part-time vocational school one day per week as was the case from the beginning of the dual system at the beginning of the twentieth century.

According to the law, all organised social partners participate in determining objectives, subjects and standards of training. The Act, however, authorises the chambers to supervise the implementation of the regulations. Furthermore, the chambers are responsible for setting up and organising examinations; in particular, they are responsible for issuing examination regulations, setting up examination boards, and holding intermediate and final examinations. The Act thus meets the demand of employers to be self-governing.

Although the Vocational Training Act of 1969 introduced changes in the organisation of vocational preparation for youth, in essence it confirmed the traditional framework and concentrated on the expansion of the existing dual system.

3. The response

During the 1970's, a critical discussion of the Vocational Training Act of 1969 followed. In 1973, the newly elected Government, a coalition of Social and Liberal Democrats, presented a new proposal to reform the Act. The most radical proposals, as described in the previous chapter, were to integrate vocational and general education fully, and to increase trade training in schools. Furthermore, the responsibility for the administration and control of vocational training would pass from the employers to the State.

After the new proposal had been brought forward, the employers informed the Minister of Economics that, if the bill became law, they would accept no further responsibility for vocational training. The chambers would neither act as agents for a State bureaucracy nor represent a kind of figurehead for the vocational training system.[21] A drastic reduction in apprenticeships, the threats by the employers to further reduce apprenticeship training, increasing youth unemployment, as well as caution in undertaking reforms which might adversely affect the efficiency of the national economy all influenced the policy discussions.

In 1974, the Minister of Economics (Liberal Democrat) advised the Minister of Education (Social Democrat) that, in view of the unstable state of the world economy, the nation's internal investment climate and the need for firms to improve their capability to adapt to change, any further unsettling of the economy had to be avoided in the foreseeable future. The Minister of Economics opposed any reforms which might conceivably weaken the economy. Finally, the coalition Government revised the draft and the Minister of Education resigned.

The reform plans motivated by the demands of social justice were thus dropped in the face of threats to the social stability and the economic viability of the nation. Instead, a law was enacted in 1976 to ensure the supply of apprenticeships in the foreseeable future.

III. Education and training system today

A. The public school system

The public school system under the Ministry of Education provides both general and vocational education, however, in separate school systems. In the general education system, after completion of four years of elementary school, students continue secondary education either for five years in the "Hauptschule" (general secondary school), for four to six years in the "Realschule" (middle school) or for nine years in the "Gymnasium". Secondary education is still based on three separate tracks, each one leading to a final qualification.

The vocational school system is composed of a variety of vocational schools, the vocational part-time school being the most important. Specialised schools offer further training after completion of apprenticeships and provide qualifications in a trade mainly at technician or master level. The second education path awards qualifying certificates in order to allow students to proceed further through inclusion of vocational content.

B. Initial training through apprenticeship

The Vocational Training Act of 1969 is still the most important law in vocational training and constitutes the framework for in-plant training. The dual system provides training for about 380 recognised occupations according to training ordinances. Apprenticeships last from three to three-and-a-half years, with three or four days on-the-job training and one or two days in school per week.

Apprenticeship training is considered a legitimate type of training for young people in German society. More than two-thirds of German youth receive training through apprenticeship. In 1987, 86 per cent of all school leavers from general secondary schools, and 81 per cent of leavers at the middle school level entered apprenticeship training.[22] A more recent phenomenon is that as many as one-third of high school leavers with access to university level education prefer to obtain vocational training in the dual system.

About 500,000 firms currently provide training. The wage of apprentices is negotiated between unions and employers, and, on average, an 18-year-old apprentice receives about 33 per cent of the wage of a skilled worker.[23]

C. Continuous education and training

In the past, continuous education and training has received less attention than the initial training system. In 1989, the unions complained that continuous training in the Federal Republic of Germany was inadequate: current activities were unco-ordinated, insufficient in quantity and not of high enough quality. Compared to other countries, in particular to France,[24] the German continuous training system is less developed.

D. Recent discussions and developments

In recent years, the training system has increasingly come under criticism in Germany. The system's effectiveness and efficiency in responding to technological and structural change, and to the European single market is questioned. Further, the dual system is criticised under equity aspects.

In the light of the demographic development and the trend to enrol in the Gymnasium, a deficit in skilled workers and technicians, in particular in small and medium enterprises, is expected.[25] Further, the quality of apprenticeship training differs between firms, regions as well as between trades. Only two thirds of the enterprises follow a written training schedule and the chambers are blamed for not sufficiently controlling the quality of training.[26]

Further, many part-time vocational schools do not meet the new demands for quality in the professional training of young persons. They hardly keep pace with technological development and lack modern tools and machines. The state of their finances is often the limiting factor when it comes to equipping vocational schools with up-to-date technology. Therefore, vocational schools are called the stepchild in the education system. Teachers lack further qualifications in new technologies and in many cases the scheduled number of weekly periods cannot really be taught due to the shortage of teachers.[27]

Some question the dual system as a concept to meet future training needs of the economy while others criticise only certain elements. In particular, the trade unions' concern is still for equity, equal opportunityn and quality of training. They insist that vocational training should not be confined to its economic function. Unions still demand a comprehensive law covering not only in-firm training, but also part-time vocational schools and continuous education and training. Further, on the grounds of equality of opportunity they criticize the fact that mobility from vocational training to higher education is very limited. Further, they propose to up-grade vocational schools within the education and training system.[28]

However, a consensus has developed among the social partners as regards the dual system. Employers, the Government and the unions agree in the principle that each school leaver should have access to high quality vocational training and that the dual system should be the main provider of training. The Government wants to maintain a training system which is training for the labour market and it considers the dual system the most appropriate one.[29]

Recent efforts to adjust the training system to new training needs has resulted in reforms in the training system. Recognised trades have been consolidated and their training ordinances have been adjusted to the new conditions and training needs. Training is becoming more general and broad-skill and the teaching of social and of key qualifications is considered more important. In 1969, training ordinances existed for 600 recognised trades. They have been consolidated to 378 in 1990. In particular, the metal and electronic trades have been consolidated and the new training ordinances allow more flexibility in tools, equipment and curriculum. The permanent modernisation of training ordinances is one instrument in meeting future training needs.[30]

IV. The French and German education and training systems

A. Development and maintenance of differences

A comparison of the French and German training systems demonstrates the inherent differences between national training systems. Once different trends and structures evolve, the various components of the education and training system as well as factors which shape it reinforce each other and thus maintain the differences.

1. Apprenticeship, school-based training and the role of the State

During the Middle Ages, vocational training in France and Germany was provided through apprenticeship. At the end of the eighteenth century, in both countries, the guilds and thus the craft sector lost their privileges and training deteriorated. Efforts in France to revive the craft sector and apprenticeship failed. When industrialisation required a better trained labour force at the end of the nineteenth century, the State took on responsibility for training. Vocational and technical schools became part of the public school system under the Ministry of Education. Training shifted from apprenticeship to schools. Under this system, initial training is rewarded by school-type diplomas, and gives access to higher level education.[31]

In contrast, the German public school system, under the Ministry of Education, refused to integrate vocational education and training when apprenticeship had deteriorated during the nineteenth century. Vocational schools remained outside the mainstream general school system and did not give access to higher-level education. When the shortage of skilled labour became a serious problem to economic development the craft sector improved apprenticeship.

In France, the craft sector in general never regained its autonomy and economic strength. Many subsequent attempts were made to revive apprenticeship in France, but none succeeded.

2. Open versus closed education system and the legitimacy of education and training

Societies give different status, esteem and legitimacy to various types of education and training. These factors have a strong impact on the development of the national training system, and determine which policy options are feasible and to what extent reforms are accepted.

France has developed an open educational system, based on multiple levels of selection as students move up the educational ladder. In theory, each student who passes a qualifying exam can continue to the next level. Education and training are considered legitimate when provided in schools and offering access to higher-level education. Technical and vocational education, which has been organised outside the Ministry of Education, has tended to become a poor relative to the general school system, and is regarded as being of lower social esteem. In 1988, in order to make apprenticeship more attractive, the Ministry fully integrated it into the secondary education system where it provides access to higher level education.

In Germany, the education system is relatively closed and based on three separate tracks. Each track leads to a final qualification. Ap-

prenticeship is considered the legitimate mode of training for graduates not going to university while prior to vocational training it is general education.

3. Distribution of responsibilities

In Germany, education and training in schools is traditionally the responsibility of the Ministries of Education of the various States. This was the case in Imperial Germany, in the Weimar Republic and in the Federal Republic of Germany. In contrast, in-plant training is considered as part of the economic sector, not the education sector. This is reflected in the fact that traditionally responsibility for in-plant training of apprentices rests with the Ministry of Economics. After World War II, it was debated whether apprenticeship training should come under the Ministry of Labour in order to shift the focus to the interests of youth and manpower planning. However, the Vocational Training Act of 1969 confirmed the historical trend by entrusting the Ministry of Economics with in-plant training in the craft sector and in industry and commerce.

In France, until the end of the nineteenth century, the Ministry of Education was mainly responsible for general education institutes and the Ministry of Commerce for those schools preparing for immediate employment. However, many of them soon became the poor relatives of those under the Ministry of Education. When the shortage of skilled labour became a bottleneck to economic development, and the apprenticeship system did not revive, the Astier Law (1919) gave responsibility for vocational education to the Ministry of Education. This trend was confirmed in 1959 and 1971 when technical institutes and apprenticeship came under the responsibility of the Ministry of Education. Nowadays, general and vocational education and training is fully under the Ministry of Education and has become to a large extent a matter for the school system.

4. Initial and continuous training

In France, training for adults has a long tradition and plays a crucial role in providing skills to the labour force. In Germany, continuous education and training does not play this important role. In Germany, the initial training system is well developed and accounts for broad skill training to more than 70 per cent of all school leavers. In a 1989 survey, 70 per cent of all masters stated that to a large extent they still benefitted from the knowledge and skills they had acquired during apprenticeship 20 years earlier.[32] In addition, as broad skills training engenders flexibility in the worker, technological change may be mastered without further training activities.[33]

The French initial training system is closer to schooling than to the world of work. The school-based initial training system imparts basic vocational and practical skills. Many workers entering the labour market possess few practical skills. They acquire more specific skills gradually on the job. Training courses for adults complement this qualification process. Further, as the workers tend to master only a limited range of firm-specific skills, change in the production process tends to result in further qualification activities. Thus, the continuous training system has developed alongside the initial training system and is a natural consequence of the school-based training system.

B. Limits to transfer: the case of the French "Ecole Polytechnique"

Education and training systems develop within a country-specific environment. In their effort to improve the education and training system countries sometimes try to copy from other countries. Some elements may be transferred when they fit into the country's specific structures and when this type of training is considered legitimate. Others may only be accepted in an adapted form or may be rejected. The case of the "Ecole Polytechnique" provides an interesting example.

At the beginning of the nineteenth century, it was realised in Germany that further economic development would require more qualified people, in particular at the middle and higher level. The "Ecole Polytechnique" in France was well-known for training at that level, with the application of a new didactic principle: "géometrie descriptive", a combination of mathematics and drawing. The idea behind the new approach was that ex-post application of mathematics to empirical research and experimentation would not be enough to control the future world; guiding principles would have to be identified by scientific research. The highest objective was the complete quantification of the world. This approach expanded research into many fields and graduates of the "Ecole Polytechnique" made careers not only in engineering, but also in areas such as literature, sociology and philosophy.

To meet German concerns about the lack of qualified labour, it was suggested to introduce the didactical principle of the French "Ecole Polytechnique" in existing technical training institutions. Despite over a ten-years debate, these institutions resisted. Finally, in 1825, a new institute was created after the model of the "Ecole Polytechnique", the polytechnical school in Karlsruhe. Its curriculum, however, turned out to be quite removed from the French model. The objective of the German polytechnical institutes became to train technicians and engineers for the needs of industry and not to develop new technologies by applying scientific research. Universities were considered to be the place for research and theory, not the polytechnics. Two reforms tried to bring the German polytechnical institutes closer to the French model. In 1832, the polytechnical institutes were reorganised into specialised departments; this resulted in an excellent training in terms of the economy, but the differences from the French "Ecole Polytechnique" remained. In addition, between 1868 and 1890, the best German polytechnical institutes were upgraded into Technical Universities and the number of students increased substantially. In contrast to France, graduates from the Technical Universities in Germany usually followed a career in natural sciences or engineering or they became entrepreneurs.

Although the German polytechnical institutes and Technical Universities were inspired by the "Ecole Polytechnique", their didactic approach, curriculum and graduates' careers turned out to be quite different from the French model. Countries, in their effort to improve their national training systems may be inspired by other countries' training systems. Transferability, however, may be limited and resisting forces may be very strong.

V. Summary

The German education and training system has been shaped by a variety of philosophical, pedagogical, economic, political and societal ideas and events during its historical development. Its main features and trends can be traced back for at least a century and, once having evolved, have proven to be stable and resistant to major changes.

The hierarchical structure of the present education system, based on three separated tracks, and the vocational training system, based on apprenticeship can be traced back to the Middle Ages.

Since Wilhelm von Humbold put forward his ideas on general and vocational education based on the principles of New Humanism, the history of the education and training system has been characterised by a separation between general and vocational education. The implementation of the dichotomy at the institutional level was reinforced by the certification system. Since the beginning of the nineteenth century, general knowledge and skills have been considered the only legitimate type of education to be provided in the mainstream public school system. Several attempts to integrate vocational and general education have failed. Instead, parallel school streams providing both general and vocational subjects have been established and expanded according to the needs of the economy or to political and social demand. These are the part-time vocational schools within the dual system and the second educational path.

Many times in history, concern about international competitiveness has been the argument in favour of reforms and expansion of the educational system. It was the case in 1875, when the educational system was expanded, specialised schools were established, and continuous education schools were transformed into part-time vocational schools. Again, in the 1960's and 1970's, the second educational path was considerably expanded after the debate on the "educational catastrophe" when technological development and international competitiveness were seen to be threatened. On the other hand, reform proposals have been rejected on the basis of the argument that the international competitiveness of the German economy would be threatened. In particular, proposals calling for an end to the dual system and demanding the integration of vocational and general education and a limitation on employers' autonomy in apprenticeship training were rejected on the basis of the argument that the quality and quantity of training might go down and that ultimately Germany would lose in world markets.

In Germany, most parents consider general knowledge the legitimate type of education to be provided in the public school system. The appropriate place to acquire vocational knowledge and skills is the firm and part-time vocational schools. Apprenticeship training is considered the legitimate mode of training for young people who are not going to University. The attitude towards what is considered legitimate education and training seems to be very stable in society and has had a strong influence on the development of the education and training system. The dual system is the result of a historical development in which society considered apprenticeship and training in firms the best mode of vocational training, acknowledged the importance of theoretical vocational education and training in schools, but at the same time refused to incorporate vocational education in the general public school system.

The trends which have developed and the structure of the educational and training system are stable and resistant to major changes.

Reforms and the introduction of new elements seem to be feasible as long as they fit into the system's structure, underlying philosophies and trends, and as long as the new elements are considered a legitimate type of training.

Countries that want to improve their educational and training systems may draw inspiration from other countries' systems. What may work successfully in one country, however, may not function in another. Countries wishing to change, up-grade or expand their education and training systems should thus pay great attention to the history and stable trends of those systems.

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